

WHAT IS CLAIMED IS:

1. A fabricating method of a semiconductor device comprising:
 - (a) forming a film which to form a pattern on a structure of a semiconductor substrate;
 - (b) forming an anti-reflection layer on the film to form a stacking structure including the film and the anti-reflection layer;
 - (c) performing a plasma treatment to form grooves on an upper surface of the stacking structure;
 - (d) forming a photoresist pattern on the stacking structure on which the grooves are formed; and
 - (e) etching the stacking structure using the photoresist pattern as a mask to form a stacking structure pattern.
2. The method of claim 1, wherein performing the plasma treatment includes performing the plasma treatment for 15-30 seconds using N₂O plasma.
3. The method of claim 1, wherein forming the photoresist pattern includes applying a photoresist layer, exposing the photoresist layer to a light selectively, and developing the photoresist layer to form the photoresist pattern exposing a part of the stacking structure.
4. The method of claim 3, wherein a far ultraviolet ray is used as a light source in exposing the photoresist layer to a light selectively.
5. The method of claim 1, wherein a SiO_xN_y layer having thickness of 200~300Å is used as the anti-reflection layer.
6. The method of claim 1, wherein the film is a metal film.

7. The method of claim 1, wherein forming the antireflection layer includes forming a protective oxide layer on the anti-reflection layer after forming the anti-reflection layer to form a stacking structure including the film, the anti-reflection layer, and the protective oxide layer.

8. The method of claim 7, wherein the protective oxide layer is formed to have thickness of equal to or less than 100Å.

9. The method of claim 7, wherein the plasma treatment is performed for 15-30 seconds using N₂O plasma.

10. The method of claim 7, wherein a SiO_xN_y layer having thickness of 200~300Å is used as the anti-reflection layer.

11. The method of claim 7, wherein the film is a metal film.

12. A semiconductor device comprising:
a film pattern formed on a structure of a semiconductor substrate; and
an anti-reflection layer which is formed on the film pattern and has the substantially the same pattern as the film pattern and grooves thereon.

13. The semiconductor device of claim 12, wherein the grooves are formed by plasma treatment.

14. The semiconductor device of claim 13, wherein the plasma treatment is performed for 15-30 seconds using N₂O plasma.

15. The semiconductor device of claim 12, wherein the same pattern of both film pattern and anti-reflection layer is formed by a photolithography process using a photoresist pattern formed on the anti-reflection layer as a mask and a far ultraviolet ray as a light source.

16. The semiconductor device of claim 12, wherein the anti-reflection layer is a SiO_xN_y layer having thickness of 200~300Å.

17. The semiconductor device of claim 12, wherein the film is a metal film.

18. The semiconductor device of claim 12, further comprising a protective oxide layer which is formed on the anti-reflection layer and has grooves thereon.

19. The semiconductor device of claim 18, wherein the protective oxide layer has thickness of equal to or less than 100Å.

20. The semiconductor device of claim 18, wherein the grooves formed on the protective oxide layer and anti-reflection layer is formed by plasma treatment performed for 15-30 seconds using N_2O plasma.